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THE LEATHER TURTLE.

BY JOHN FORD.

IN all the realm of nature few avenues are more attractive to the student than those which lead into the ocean, for though trodden from time immemorial, a peculiar glamor still haunts the almost impenetrable veil beyond which they end. Such a mysterious charm might of itself awaken an interest in the minds of men. But an incentive far more potent is found in the hope that behind this shadowy veil thousands of unknown forms of life are hidden, awaiting only the coming of some modern Aladdin at whose touch the doors of their habitations shall fly open and their strange and weird beauty be revealed.

That myriads of living creatures do people these wondrous depths is shown by the appearance, at intervals, of the more venturesome ones on our shores, inciting the careful observer to renewed efforts in the study of their forms, their habits, and their previous surroundings.

It is true that many problems regarding the latter must of necessity remain unsolved, yet much may be studied and much be learned by patient and persistent endeavor.

With this purpose in view I have collected a few facts respecting the recent advent of specimens of *Sphargis coriacea*, a species as little known to the general reader, perhaps, as any other of like dimensions found in the Atlantic. The animal has indeed been referred to by a number of writers, but in all probability their stock of information has, in most cases, been derived from hearsay rather than from direct examination of specimens. In an English work on general zoölogy, published by Dr. George Shaw in 1802, we are informed that the coriaceous tortoise is a native of the Mediterranean, albeit specimens had been taken now and then on the coast of England; and of one captured in 1729 near the river Loire, in France, the author remarks: "It is said to have uttered a hideous noise when taken; its mouth at the same time foaming with rage and exhaling a noisome vapor." He also adds, that according to Lacepede, "the Coriaceus tortoise is one of those with which the Greeks were well acquainted, and he supposes it to have been the species particularly used in the construction of the ancient lyre or harp, which was at first composed by attaching strings to the shell of some marine tortoise."

The first specimen seen in this latitude, of which I can find any record, was captured in Chesapeake bay in the year 1840. This was measured by Dr. E. Hallowell, an eminent herpetologist, but his figures differ so slightly from others made more recently, it is unnecessary to repeat them. As, however, the description given in the second volume of North American Herpetology, a work published in 1842 by Dr. John Edwards Holbrook, was the result of an examination of this specimen, it is reproduced here in a somewhat condensed form, as follows:

> " *Characters.*—Head large, jaws strong, superior having three deep triangular notches, inferior hooked; body covered with a coriaceous skin, tuberculated in the young, smooth in adult animals; extremities without nails.
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> "*Description.*—The carapace is sub-cordiform, largest before and deeply concave on the neck; it is narrow and pointed behind and above, and is marked with seven longitudinal carinæ, one of which runs along the entire vertebral line. On either side of this are three others, the external ones following the margin of the carapace from its anterior to its posterior extremity, where they meet in a point above the tail. The nostrils are anterior and near together. The neck is short, very thick and covered with a coriaceous skin. The anterior extremities are twice the length of the posterior ones. The tail is short and extends but little beyond the carapace. The whole superior surface of the animal is of a dark brown color with exception of the carinæ, which are tinged in different places with obscure dirty white."

A very fair portrait of *Sphargis coriacea* accompanies this description.

So far as I can learn no later evidence has been given of the presence of Sphargis on our shores prior to the summer of 1878, when four specimens were stranded upon the coast of New Jersey. Of these two were doubtless first discovered near Atlantic City by the writer and a friend, Mr. Chas. Morris, one of them, in fact, being observed for some time before it was borne by the waves to our feet. They were both dead, though otherwise in good condition.

The two others mentioned were landed at a later period near Beach Haven, Ocean county. In reference to them Isaac Hall, an old sea captain, remarked, that "he had seen turtles of all kinds, but these were the largest he had met in any quarter of the globe."[1]

In the early part of the present year (1879) a fine specimen was shot off the coast near Wilmington, North Carolina, by Capt. Chadwick of that city; and still later another was caught at Gloucester, Virginia, by Mr. W. H. Ash, the wharf agent at the point, who struck it a powerful blow on the head with an oar, stunning it and making it an easy prey.

The former of these, which is said to have measured seven feet in length by three and a half feet in width, appears to have puzzled the good people thereabouts in regard to its true character, some calling it a turtle and others a devil-fish, while the captain held to the opinion that it was Old Nick himself. Unfortunately, however, for their future prospects, it proved to belong to the species under consideration; "more's the pity," perhaps.

The specimen taken at Gloucester Point, though smaller than the last mentioned, was none the less surprising to its captor and others who saw it, many of them being of the same opinion regarding the fate of "Old Nick" as their more southern brother.

With the exception of one taken alive in Delaware bay, June 1, 1879, the above half dozen specimens comprise, so far as any records appear, the whole number found on our coast since 1840, a fact which seems to corroborate the opinion of Dr. Holbrook, who assumed that they were quite rare in American waters. Nevertheless, Dr. Leidy, Mr. John A. Ryder and others, who have given the subject much attention, believe them to be more plentiful than has been supposed.[2]

As a proof at least of their wide distribution, it may be mentioned that in addition to those referred to by Dr. Gray, two specimens were cast up on the coast of France in 1872; one of which was obtained by Prof. Paul Gervais, and the skeleton preserved by him for the Museum d'Histoire Naturelle at Paris.

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[1] An account of this turtle was given by Dr. D. H. Storer in his Report on the Reptiles of Massachusetts, 1839. The specimen there described was figured on an excellent plate by Dr. Jeffreys Wyman; it "was taken asleep on the surface of the water in Massachusetts bay, in the year 1824." A specimen weighing about 1000 lbs. was captured in Narragansett bay in the summer of 1878, and was presented to the Museum of the Brown University, Providence, R. I., where it was stuffed by the Curator, Prof. J. W. P. Jenks.—*Editor.*

[2] Since the above was written I have learned from Mr. John H. Dusenbury, a Philadelphia dealer, that he received a dead specimen of *Sphargis coriacea* from Delaware bay, in 1872, which weighed 916 pounds; the skeleton of which was afterwards placed in the collection belonging to Mr. O'Brien, the showman.

The great age of the genus in Europe is also shown by the discovery of *Sphargis pseudostracion* Gervais, in the Miocene, near Montpelier. *Protostega gigas* Cope, from the Cretaceous of Kansas is closely allied to *Sphargis coriacea*, though a much larger species, the length being 12.8 feet and the width from tip to tip of the anterior flippers, 11.3 feet.

Two other species, *P. neptunia* and *P. tuberosa*, the former from the Cretaceous of New Jersey and the latter from the same formation in Mississippi, have also been described by Prof. Cope, which seems to prove that the genus Protostega was quite as prevalent in Cretaceous seas as is Sphargis in those of the present.

Unfortunately the specimen captured in Delaware bay and brought to Philadelphia, lived but a short time afterward; its death having been hastened by an injury received from a boat hook or other weapon during the struggle to capture it.

The chance of seeing such a huge denizen of the ocean was a rare one, however, and very many citizens, including some eminent naturalists, took advantage of it. As a precautionary measure, the animal was kept upon its back; nevertheless, the muscular power displayed by the creature when trying to regain its normal position was something remarkable. Especially was this the case just previous to dying, when, according to its owner's statement, the united efforts of four men were required to keep it in place.

During a quiet interval the subjoined measurements were taken by the writer, kindly assisted by that careful naturalist, Mr. John A. Ryder:

	Feet.	Inches.
Entire length of animal	6	7
Length of carapace	5	0
Greatest width of same	3	4
From tip to tip of anterior flippers	8	8
Greatest width of anterior flippers	1	0
From point of beak to edge of carapace	1	3
Diameter of neck	1	0
Elevation	1	4
Width of breast	3	0
Length of tail	0	6

As a subsequent measurement suggested no alteration of the figures given they may therefore be accepted as approximately correct.. The weight of the animal, taken soon after its death, was 765 pounds; as much, perhaps, as the half dozen specimens I have alluded to would average.

It follows, therefore, that these were but a little more than half grown, or that 1200 pounds, the estimated weight of an adult, as given by Dr. Holbrook, is much too large. A further examination of the specimen, which was fortunately secured by Prof. Cope, will, doubtless, decide the matter. In the meantime, a few of the more prominent characters pertaining to the animal may be profitably referred to. For instance, the mode of respiration in Sphargis is peculiarly marked. This is apparently effected by inflating the throat with air until it is much enlarged, and then by closing the nostrils and contracting the throat, suddenly forcing the air back into the lungs. That this pumping process is common to all the Testudinata is known, but that it effects respiration is denied by Drs. Mitchell and Morehouse, who ascribe this function to the axillary and inguinal muscles.

A much wider difference is found in the skeleton. Thus, in Sphargis the vertebral column is entirely independent of the carapace, while in other genera it is co-ossified. It differs also in having the carapace disconnected with all the other parts of the skeleton. Another peculiarity consists in the carapace being composed of a vast number of small bony irregular tesseræ joined by minute suture. The plastron is also more rudimentary than that of other turtles, being represented by a mere oblong ring of bones. Of course these embrace the more prominent features. It is not improbable, however, that a careful study of the animal will develop other points of equal interest, in which event the cause of science will be profited.

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WERE THEY MOUND-BUILDERS?

BY S. L. FREY.

THE question as to whether the mound-builders extended their occupation as far east as Eastern New York is an open one; and while some relics recently discovered have led some writers[1] to the conclusion that they had, I think that we need much stronger proof before we are warranted in drawing this inference.

It is but fair to conclude, however, judging from analogy, that

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[1] Wm. L. Stone, *Magazine of American History*, September, 1878; Prof. Geo. W. Perkins, Portland Meeting of the American Association; Smithsonian Contributions, II, p. 58.